

Lorillard

MEMORANDUM

December 30, 1985

TO: A. W. Spears
FROM: W. E. Crouse
SUBJECT: A Review of the ACVA Residential Inspection Methodologies

A review of the protocols and sampling methodologies used in the ACVA residential inspection dated October 1985 was performed. The protocols used are presently acceptable to the industrial hygiene community.

If such a study were expanded to study the pollutant contribution attributed by environmental tobacco smoke (ETS) then the following methodologies should be modified.

Formaldehyde:

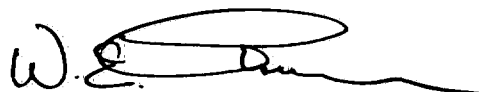
Presently, the NIOSH chromotropic acid formaldehyde method is accepted as the technique for the measurement of airborne formaldehyde. Numerous studies have validated both the impinger and passive dosimeter techniques. Yet, the basic weakness of most colorimetric methods lies in the effect of interfering substances. The chromotropic acid method is known to be adversely affected by numerous organic species. Our studies with environmental tobacco smoke have indicated that the color development for the chromotropic acid system was adversely affected resulting in artificially high formaldehyde values relative to the specific DNPH chromatographic method. Based upon these observations, I would recommend an impinger chromatographic method (e.g. DNPH-Impinger System) which would be formaldehyde specific and free from interferences.

Oxides of Nitrogen:

In the ACVA study, it was presumed that the nitrogen dioxide Gastec sampling tubes were used as a screening device for ambient concentrations of nitrogen oxides in excess of 1 ppm. The technique has an accuracy of only ± 25 percent. Real time monitors utilizing chemiluminescent detection are available for the continuous measurement of nitric oxide. Nitrogen dioxide can also be measured using the more accurate ASTM method D-2914-70T. Another viable alternative would be the MDA NO₂/NOX Field kit which was evaluated and found to be satisfactory by Philip Morris in the presence of ETS. All other protocols/methodologies in the ACVA study were acceptable.

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Enclosed for your inspection are a number of articles reproduced from the American Industrial Hygiene Journal. Most of the articles deal with either protocols or analytical methodologies for measuring selected pollutants in indoor environments.


W. E. Crouse

WEC/fr

c: H. J. Minnemeyer
F. J. Schultz

Enc.

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